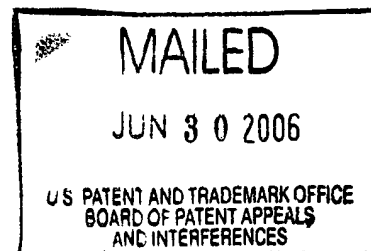


The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ALEXEY S. KABALNOV,
LOREN E. JOHNSON and DONALD E. WENZEL



Appeal No. 2006-1637
Application 09/895,468

ON BRIEF

Before GARRIS, WARREN and KRATZ, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

Decision on Appeal and Opinion

We have carefully considered the record in this appeal under 35 U.S.C. § 134, and based on our review, find that we cannot sustain the grounds of rejection advanced on appeal: claims 1 through 4 under 35 U.S.C. § 103(a) as being unpatentable over Tognetti et al. (Tognetti) in view of Pfaff et al. (Pfaff) (answer, pages 3-4); claims 5 through 6 under 35 U.S.C. § 103(a) as being unpatentable over Tognetti in view of Pfaff as applied to claims 1 through 4, further in view of Moffatt et al. (Moffatt) (answer, pages 4-5); and claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Tognetti in view of Pfaff and Moffatt as applied to claims 1 and 5, further in view of Daniels (answer, pages 5).¹

¹ The examiner has objected to claim 8 as an allowable claim dependent on a rejected claim (Office action mailed January 13, 2005; answer, page 2). Claims 10 through 15 are also of record

We refer to the answer and to the brief and reply brief for a complete exposition of the positions advanced by the examiner and appellants.

The dispositive issue with respect to the grounds of rejection advanced on appeal is whether the combined teachings of Tognetti and Pfaff as relied on by the examiner would have reasonably suggested the claimed invention encompassed by representative claim 1 to one of ordinary skill in this art. The plain language of claim 1 encompasses a method of digitally printing in any manner on any manner of article comprising at least the steps of applying any amount of any “fluid glazing material” to create any manner and size of a coated surface on the article, “jetting” by any means any amount of any manner of “aqueous chromophore-containing fluid” onto such surface and “firing” to any extent the article after the “jetting” step. Appellants disclose in the written description in the specification that the term “chromophore . . . shall mean any substance that imparts a color to an article after being fired” (specification, page 5, ll. 21-23). The terms “article” and “glazing material” are not defined in the specification. The former term is disclosed to “include any substance that can be printed on and withstand the heat associated with firing,” such as “a ceramic” article (*id.*, page 5, ll. 9-20, and appealed claim 4; see also page 7, ll. 17-24). The term “glazing material” is disclosed to “include any material used to coat an article that, when heated or fired, will harden, fuse, or vitrify” and “can include . . . the presence of chromophores” (*id.*, page 6, ll. 10-14). The terms “jetting” and “firing” are not defined or otherwise discussed. We consider these terms in context of the written description in the specification to broadly encompass any manner of projecting fluid under pressure, including spraying, and to encompass any manner of drying or baking of coated articles, respectively. The transitional term “comprising” opens the claim to encompass processes which include additional steps and materials, including melting an aqueous paste in a print head prior to the step of jetting the now aqueous fluid material onto the coated surface through the print head. *See generally, In re Baxter*, 656 F.2d 679, 686-87, 210 USPQ 795, 802-03 (CCPA 1981) (“As long as one of the monomers in the reaction is propylene, any other monomer may be present, because the term ‘comprises’ permits the *inclusion* of other steps, elements, or materials.”).

and have been withdrawn from consideration by the examiner under 37 CFR § 1.142(b). Claims 1 through 15 are all of the claims in the application.

Thus, claim 1 encompasses methods wherein the “chromophore” is any manner of chromophore capable of withstanding the “firing” step and is contained in any manner of aqueous fluid at the moment of “jetting” onto the fluid glazing material coated surface. *See, e.g., In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364, 70 USPQ2d 1827, 1830 (Fed. Cir. 2004); *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989).

The examiner submits that Tognetti would have taught applying an aqueous chromophore-containing fluid to an article coated with a fluid glazing material “using any types of printing process,” relying on page 2, ll. 3-15, and page 2, ll. 36-40 and 52-53, and page 4, ll. 3-15, with respect to the manner of printing and the aqueous chromophore-containing fluid (answer, pages 3-4). The examiner contends that Tognetti uses “direct printing . . . instead of ink jet printing,” and finds that “Pfaff teaches that ink jet printing is direct or indirect printing,” relying on col. 2, ll. 35-42 (answer, page 4). On this basis, the examiner concludes that it would have been “obvious to have provided Tognetti with [*sic*, an] ink jet print head” (*id.*).

Appellants submit that the examiner has not advanced any motivation to combine these references because “Tognetti teaches the application of aqueous chromophore-containing fluids,” and “Pfaff teaches a process of printing non-aqueous inks by melting pigments in a thermoplastic medium, and jetting the melted inks,” thus using “‘solid inks’ for ink-jet printing” (brief, page 19). Appellants argue that the term “direct printing” appearing in the disclosure “processes include silk screening, direct printing, rotogravure, etc.” in Tognetti (page 2, ll. 3-5), refers to a “type of printing process” in which “the colorants are applied directly to a surface,” such as silk-screen and gravure processes, as opposed to “indirect printing” involving “printing on a transfer material for latter application to the article,” pointing out that Pfaff discloses “direct printing” and “indirect printing.” Thus, appellants contend that there is no teaching or suggestion in Tognetti or in Pfaff to modify the method of Tognetti by ink-jet printing the aqueous chromophore-containing fluids of that reference (*id.*, pages 20-21). Appellants further submit that Pfaff teaches away in acknowledging in cols. 1-2 that it was known that heavy pigments have a pronounced tendency to form a sediment leading to failure when attempting to print ceramics using an ink jet process (brief, pages 22-23).

The examiner responds that “Pfaff teaches that direct printing is one type of ink jet printing” for ceramics and “Tognetti discloses applying an aqueous chromophore-containing fluid onto the coated surface,” and Pfaff is relied on “only . . . to shows [*sic*] that it is obvious to use ink jet printer to print on the ceramic” (answer, pages 6-7). The examiner further takes the position that “the failure problem in the ink jet printer [at Pfaff col. 2, ll. 3-8,] is only a prior art problem” and that “Pfaff’s invention is to overcome this problem by still using inkjet printer technology to print on the ceramic” (answer, page 7).

Appellants reply that “Pfaff did not solve the problem of the tendency of color powders to settle out from aqueous or alcoholic suspensions and blocking the print nozzles,” using instead “an unconventional heated non-aqueous thermodynamic paste for printing through the nozzles,” and thus, “does not teach the ability to use ink-jet technology to print aqueous chromophore-containing fluid” (reply brief, pages 7-8; original emphasis deleted).

In order to establish a *prima facie* case of obviousness under § 103(a), the examiner must show that some objective teaching, suggestion or motivation in the applied prior art taken as a whole and/or knowledge generally available to one of ordinary skill in this art would have led that person to the claimed invention as a whole, including each and every limitation of the claims arranged as required by the claims, without recourse to the teachings in appellants’ disclosure. *See generally, In re Kahn*, 441 F.3d 977, 985-88, 78 USPQ2d 1329, 1334-37 (Fed. Cir. 2006); *In re Rouffet*, 149 F.3d 1350, 1358, 47 USPQ2d 1453, 1458 (Fed. Cir. 1998); *In re Lee*, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002); *Pro-Mold and Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1629-30 (Fed. Cir. 1996); *In re Fritch*, 972 F.2d 1260, 1265-66, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992); *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Fine*, 837 F.2d 1071, 1074-76, 5 USPQ2d 1596, 1598-1600 (Fed. Cir. 1988); *In re Dow Chem. Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988).

We find that, as relied on by the examiner, Tognetti would have disclosed aqueous chromophore-containing fluids which contain ceramic powders and can be applied “using known printing processes, such as for example silk-screening, direct printing, rotogravure, and so on” (pages 2-3, [0018]-[0021]; see also page 2, [0011], and page 4, [0041]-[0042]). We agree with

the arguments raised by appellants and with the finding of the examiner (answer, page 6, first paragraph), that the enumerated printing processes of Tognetti apply chromophore-containing material directly to the article, and that ink-jet processes can do so as well as evinced by Pfaff (col. 2, ll. 23-28).

However, we find two flaws in the examiner's position. First, as appellants point out, the examiner has not provided a scientific explanation and/or objective evidence establishing that one of ordinary skill in this art would have used a heated ink jet head taught by Pfaff for "jetting" thermoplastic color pastes having a high content of inorganic solids including ceramic pigments onto ceramics (e.g., col. 2, ll. 20-59), to apply the aqueous chromophore-containing fluids which contain ceramic powders taught by Tognetti. And second, as appellants further point out, the examiner has not addressed Pfaff's view that inkjet technology had not been used in the prior art for the decoration of ceramic materials with solutions containing inorganic pigments (e.g., col. 1, l. 16, to col. 2, l. 19), which solutions appear to include the ceramic powder containing aqueous fluids taught by Tognetti on which the examiner relies.

Accordingly, on this record and in the absence of such reasoning or evidence, the examiner has not established a factual foundation in support of the grounds of rejection involving appealed claims 1 through 7, and in the absence of a *prima facie* case, we reverse these grounds of rejection. *See generally, Rouffet*, 149 F.3d at 1358, 47 USPQ2d at 1458 ("hindsight" is inferred when the specific understanding or principal within the knowledge of one of ordinary skill in the art leading to the modification of the prior art in order to arrive at appellant's claimed invention has not been explained); *Dow Chem.*, 837 F.2d at 473, 5 USPQ2d at 1531 ("The consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that [the claimed process] should be carried out and would have a reasonable likelihood of success viewed in light of the prior art. [Citations omitted] Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure.").

The examiner's decision is reversed.

Remand

We remand the application to the examiner for consideration of issues raised by the record. 37 CFR § 41.50(a)(1) (2005); Manual of Patent Examining Procedure (MPEP) § 1211 (8th ed., Rev. 3, August 2005).

We find that Tognetti would have disclosed to one of ordinary skill in this art a process in which is applied a “layer of a mixture comprising at least chromophore salts suspended in liquid medium” (page 2, [0011]). The liquid medium can further contain “ceramic powders” which “are generally vitreous with the addition of colorant oxides,” is prepared in known manner with “homogenizing and refining,” and “can be applied using known printing processes, such as for example silk-screening, direct printing, rotogravure, and so on” (pages 2-3, [0018], and page 3, [0019] and [0032]). Tognetti would have disclosed that the applied material “can act both as a liquid medium in the preparation of inks for printing on ceramic tiles, or as a chromophore agent for modifying the coloration of the surfaces” it contacts (page 3, [0033]).

Tognetti would have further disclosed “an example embodiment” of an aqueous chromophore-containing liquid material prepared with “b. [a]n aqueous solution of one or more organic or inorganic salts, with chromophore action,” in an amount in the range of 5 to 60 weight percent (page 3, [0041]). The chromophore containing fluid also contains “a. [a] organic wetting agent” in the range of 5-50 weight percent, and “e. [a] thickening and suspending agent,” in the range of 0.1-5 weight percent. The function of these ingredients is to “[favor] the dispersion of the ceramic powders during the liquid medium of the mixture used for printing” and “to obtain a correct cohesion degree between the liquid medium (that is, the colorant product) and the solids (that is, the ceramic powders) . . . [which] enables a considerable reduction in the risk of separation and/or decantation of the ceramic powders contained in the mixture,” respectively (*id.*; see also page 3, [0037] and [0038]).

We find no teaching in Tognetti of the amount of ceramic powder which can be used in the aqueous chromophore-containing fluid material. It is of interest that, in this respect, Tognetti would have still further disclosed that the material “can be applied directly . . . *without any preliminary mixing with ceramic powders*, on the tile surface,” and “[i]n such a case it is preferable to choose a composition of the colorant by virtue of which the product is *more fluid*

and less viscous with respect to the above-described case. The product might then be *spray applied*, for example” (page 3, [0034]-[0036]; emphasis supplied). Indeed, Tognetti states no requirement for the presence of ceramic powder in the liquid mixture described in the abstract and specifies a requirement for ceramic powders only in reference claim 6.

Thus, we find that Tognetti would have taught one of ordinary skill in this art that the aqueous chromophore-containing liquid disclosed therein can contain no ceramic powder and thus can be “spray applied,” or can contain any amount of ceramic powder along with ingredients which maintain the ceramic powder in suspension.

Therefore, the examiner should consider whether one of ordinary skill in this art would have been motivated to rely on Tognetti alone or to combine the teachings of methods using any aqueous chromophore-containing fluids disclosed by Tognetti with any prior art developed by the examiner, including Pfaff, establishing the state of the art with respect to any manner of “jetting,” including “spraying,” material with and without suspended solids, such as ceramic powders. If the examiner concludes that this person would have been motivated to combine references, the examiner should further consider whether this person would have been led by such combination to modify the method of Tognetti by replacing the specific printing processes stated therein with a “jetting” printing method, as we have interpreted this term above, in the reasonable expectation of “jetting” such an aqueous chromophore-containing fluid, thus arriving at the claimed method encompassed by claim 1, as we have interpreted this claim above, and claims dependent thereon. Where Tognetti is relied on alone, the examiner should consider whether the teaching in the reference that aqueous chromophore-containing fluids without any preliminary mixing with ceramic powders, which are more fluid and less viscous and thus, can be “spray” applied, is sufficient to render at least claim 1, as we have interpreted this claim above, and claims dependent thereon *prima facie* obvious within the meaning of § 103(a). The examiner’s considerations should also include dependent claim 8 since Tognetti would have taught the application of additional coatings prior to firing (see, e.g., page 2, [0013]).

We point that our consideration of the appealed claims vis-à-vis Tognetti involves materially different factual considerations than those involved with the examiner’s grounds of rejection, to which appellants have not had an opportunity to respond. *See generally, In re*

Eynde, 480 F.2d 1364, 1370-71, 178 USPQ 470, 474-75 (CCPA 1973); MPEP § 1213.02 (8th ed., Rev. 3, August 2005).

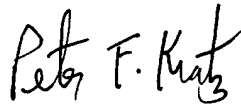
Accordingly, the examiner is required to take appropriate action consistent with current examining practice and procedure to consider whether a new ground or grounds of rejection should be entered on the record based on the above findings for purposes of further prosecution of the appealed claims, supplying and applying any other applicable prior art with respect to any or all of grounds as the examiner deems appropriate.

We hereby remand this application to the examiner, via the Office of a Director of the Technology Center, for appropriate action in view of the above comments.

REVERSED
REMANDED



CHARLES F. WARREN
Administrative Patent Judge



PETER F. KRATZ
Administrative Patent Judge

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GARRIS, Administrative Patent Judge, Dissenting:

I dissent from the majority's decision to reverse the examiner's § 103 rejection of claim 1 et al. and to remand this application to the examiner for consideration of rejections based on the same prior art applied in the aforementioned rejection.

The majority's reversal decision is concisely expressed in the following quotation from pages 4-5 of the decision:

We agree with the arguments raised by appellants and with the finding of the examiner (answer, page 6, first paragraph), that the enumerated printing processes of Tognetti apply chromophore-containing material directly to the article, and that ink-jet processes can do so as well as evinced by Pfaff (col. 2, ll. 23-28).

However, we find two flaws in the examiner's position. First, as appellants point out, the examiner has not provided a scientific explanation and/or objective evidence establishing that one of ordinary skill in this art would have used a heated ink jet head taught by Pfaff for "jetting" thermoplastic color pastes having a high content of inorganic solids including ceramic pigments onto ceramics (e.g., col. 2, ll. 20-59), to apply the aqueous chromophore-containing fluids which contain ceramic powders taught by Tognetti. And second, as appellants further point out, the examiner has not addressed Pfaff's view that inkjet technology had not been used in the prior art for the decoration of ceramic materials with solutions containing inorganic pigments (e.g., col. 1, l. 16, to col. 2, l. 19), which solutions appear to include the ceramic powder containing aqueous fluids taught by Tognetti on which the examiner relies.

Accordingly, on this record and in the absence of such reasoning or evidence, the examiner has not established a factual foundation in support of the grounds of rejection involving appealed claims 1 through 7, and in the absence of a *prima facie* case, we reverse these grounds of rejection.

It is clear from the above-quoted exposition that the majority's reversal of the examiner's claim 1 rejection is based on "two flaws" concerning the examiner's application of the Tognetti and Pfaff references against this claim. First, the majority believes that the examiner has failed to establish that an artisan "would have used a heated ink jet head taught by Pfaff ... to apply the aqueous chromophore-containing fluids which contain ceramic powders taught by Tognetti" (*id.*). Second, the majority believes "the examiner has not addressed Pfaff's view that inkjet technology has not been used in the prior art for the decoration of ceramic materials with solutions containing organic pigments ... which solutions appear to include the ceramic powder containing aqueous fluids taught by Tognetti on which the examiner relies" (*id.*). In my opinion,

however, the majority has misconstrued the examiner's reliance on these applied references.


Initially and most importantly, it is imperative to appreciate that, in rejecting claim 1, the examiner has not limited his reliance on Tognetti to only the aqueous fluids embodiment which includes ceramic powder, as the majority believes. Instead, the examiner relies on Tognetti's teachings of aqueous chromophore-containing fluids generally (see the answer in its entirety) which include those fluids that do not contain ceramic powder such as the spray-applied fluid discussed in the remand section of the majority decision. Secondly, also contrary to the majority's belief, the examiner's reliance on Pfaff is not limited to the heated inkjet head used by patentee for jetting thermoplastic color pastes. Rather, the examiner has repeatedly characterized his reliance upon Pfaff, vis-à-vis., ink jet printing generally (again see the answer in its entirety). For these reasons, the examiner's rejection of the independent claim on appeal is not flawed in the manner characterized by the majority.

In essence, I consider the examiner's application of the Tognetti and Pfaff references against appealed claim 1 to establish a *prima facie* case of obviousness for reasons which include those expressed in the remand section of the majority decision. In this latter regard, the majority believes that its "consideration of the appealed claims vis-à-vis Tognetti involves materially different factual considerations than those involved with the examiner's grounds of rejection, to which appellants have not had an opportunity to respond" (decision, page 7). However, the factual considerations expressed in the remand are not materially different from those involved with the examiner's rejection of claim 1 since, as earlier explained, this rejection is not flawed in the manner characterized by the majority. It follows that the claim 1 rejection has provided appellants with an adequate opportunity for responding to the factual considerations involving the Tognetti reference including the considerations expressed in the majority's remand discussion. This last mentioned point is evinced by the fact that the appellants' brief (see the discussion of Tognetti on page 14) explicitly addresses the specific Tognetti disclosure

(i.e., the disclosure at lines 50-51 on page 3) upon which the majority focuses in the remand section of the decision.

In light of the foregoing, I would affirm at least the examiner's § 103 rejection of appealed claim 1 as being unpatentable over Tognetti in view of Pfaff. Furthermore, in light of such an affirmance, no basis would exist for remanding this application to the examiner for the reasons expressed by the majority.

Therefore, I dissent from the decision of the majority.


BRADLEY R. GARRIS
Administrative Patent Judge

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• Appeal No. 2006-1637
• Application 09/895,468

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